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Project

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TITLE

FOREST INSECT HAZARD INVENTORY

PROGRESS REPORT: ADIN AREA, CALIFORNIA

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by
P. C. Johnson
Berkeley, California
March 20, 1940

SUBJECT--

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Forest Insect Laboratory
Berkeley, California
March 20, 1940

FOREST INSECT HAZARD INVENTORY

PROGRESS REPORT: ADIN AREA, CALIFORNIA

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FOREST INSECT HAZARD INVENTORY
PROGRESS REPORT: ADIN AREA, CALIFORNIA

INTRODUCTION

The Forest Insect Hazard Inventory was begun in 1937 by the Berkeley forest insect laboratory following development of indices and methods in 1936. The principal objective of the Inventory is the classification of the so-called "eastside" pine timberlands according to their potential hazard from insect infestations. The Inventory is to cover only those pine stands in northern California east of the Cascade-Sierra mountain range because the indices of hazard developed and used by the Inventory are relative to infestation conditions peculiar to this region.

Project reports have been made as each reporting area of from one-fourth to one-half million acres has been completed. Since 1937 the Inventory has sampled and reported upon the following areas (see References):

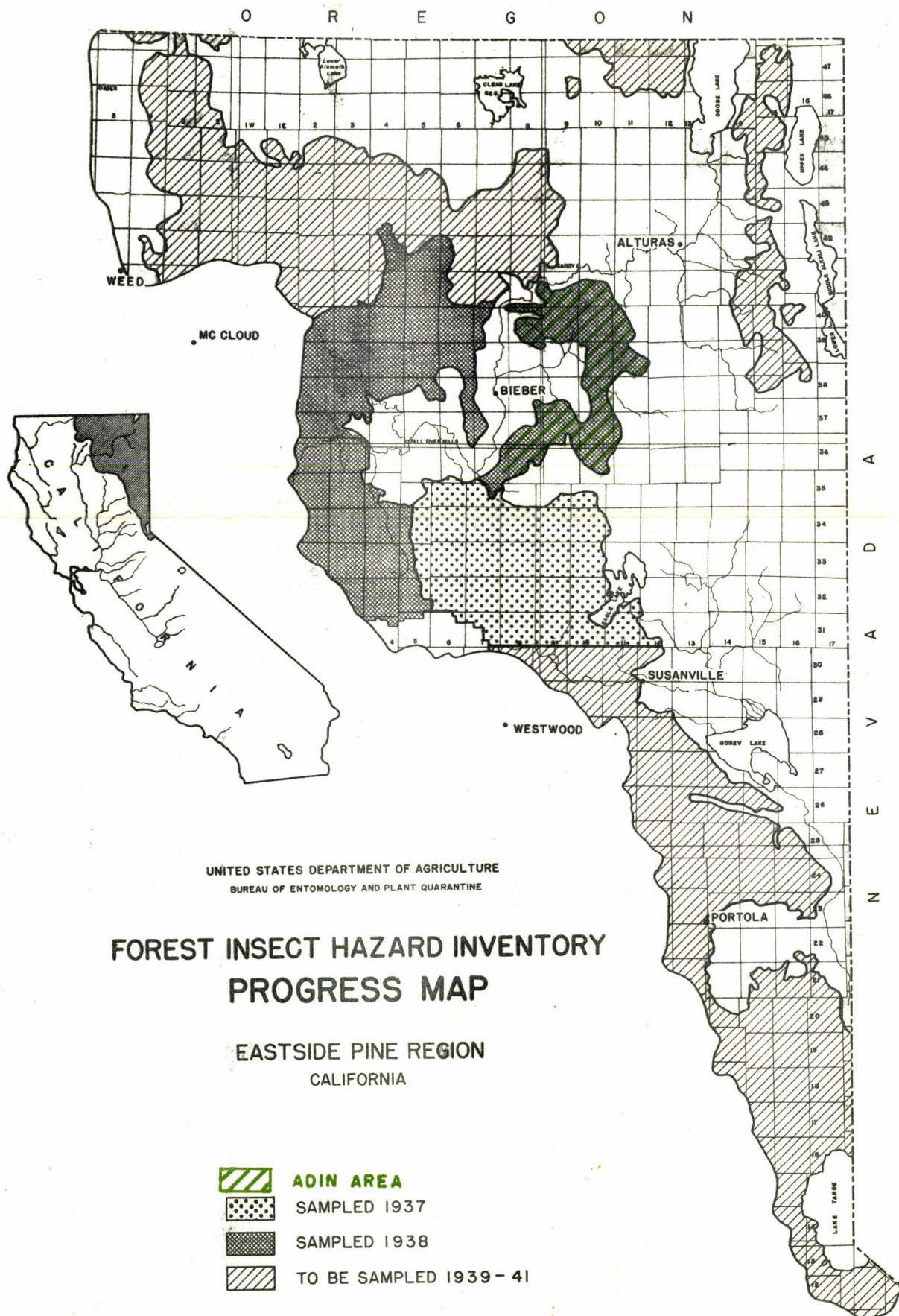
<u>Year</u>	<u>County</u>	<u>Area</u>	<u>Acres</u>
1937	Lassen	Eastern Lassen	467,000
1938	Shasta	Burney	214,000
	Shasta-Siskiyou	Fall River	160,000
	Siskiyou, Modoc, Lassen	Big Valley Mtn.	100,000
	Modoc-Lassen	Adin	235,000

This progress report is a presentation of the results of the Inventory in the Adin Area. The methods used to obtain these results, however, are applicable to all areas sampled by the Inventory. These methods are explained in some detail later in the report.

The Adin Area is the fourth and last of the eastside pine areas covered by the Forest Insect Hazard Inventory during 1938. This area lies entirely within the Big Valley Ranger District of the Modoc National Forest and includes all timbered land in Townships 36 to 41 North and Ranges 7 to 11 East, Mt. Diablo Meridian. Its relation to other eastside pine stands in northern California can be seen in the accompanying Progress Map. Sampling of the area was accomplished by a field party of twelve men between July 22 and September 19, 1938.

The Adin Area can be regarded as an ideal reporting unit because of its comparative isolation and the fact that it is already considered as a complete unit for administration, protection and management purposes. It is surrounded on most sides by non-timbered lands.

Prior to the Inventory no systematic insect loss surveys had been made by the Bureau. However, occasional examinations had indicated the presence of an insect problem of serious proportions. Subsequent field



samples obtained by the Forest Service for timber sale appraisals and timber management planning substantiated those indications.

CHARACTERISTICS OF THE ADIN AREA

Physical Features

The Adin Area includes all the timberlands lying on the mountainous slopes surrounding Big Valley to the north, east, and south. Few of the slopes are precipitous but also, there are few timbered flats. This mountain chain is known locally as the Adin Mountains and they extend southward from the Pit River to Hayden Hill thence westward to a point southeast of the town of Bieber. Elevations range from 4,200 to 6,800 feet above sea level.

Portions of the area are quite arid and border closely upon desert conditions. Precipitation is confined chiefly to the winter and spring months and averages about 15 inches per year. As a result the drainages are mostly intermittent, and the soil, a clay type of volcanic origin, becomes very dry during the summer months.

Forest Description

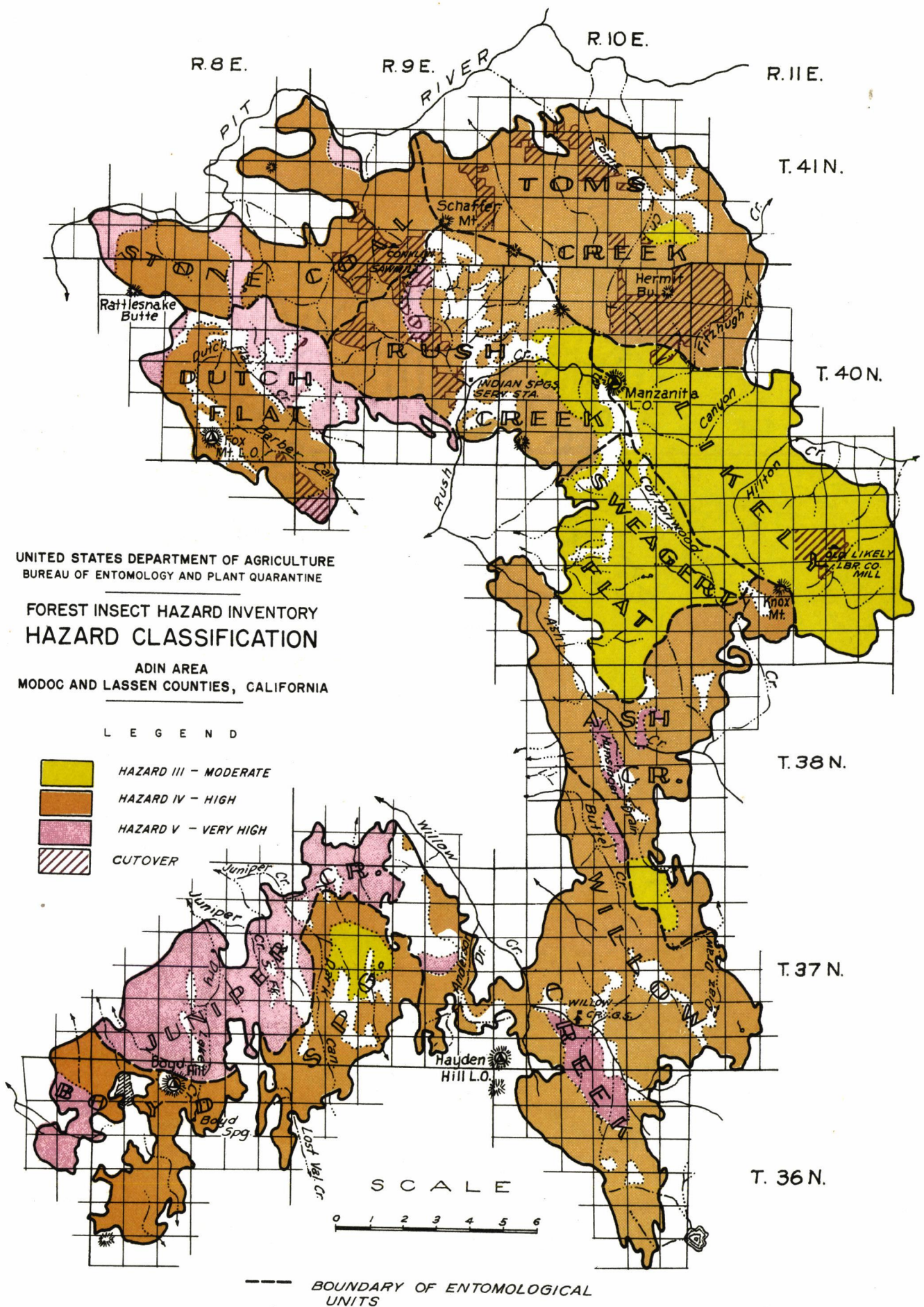
The timber stand is shown by the colored portions of the Hazard Classification map and is chiefly the open-grown ponderosa pine, Pinus ponderosa Laws., characteristic of many eastside stands. Other species are to be found in some areas; Jeffrey pine, P. jeffreyi "Oreg. Comm.", in the high plateau region south of Big Valley, and white fir, Abies concolor L. & G., and incense cedar, Libocedrus decurrens Torrey, on the north exposures. Most of the stands are mature and overmature with a scattering of younger age classes throughout. Site index varies from IV to V, the latter chiefly on the timber fringe. Stand density is variable and often the stand is broken up by sagebrush or juniper openings.

Present Management

Until recently the only cutover land in the Adin Area covered but about 3000 acres on the north slope of Adin mountain and on a small area southeast of Hilton Creek. More extensive operations have been in progress since 1934 and have added another 4600 acres (January 1, 1938).

Land ownership in the Adin Area is divided as follows:

Private	107,470 acres	46 percent
Government	127,040 acres	54 percent



The Forest Service administers the Government owned timberlands and at present is operating under a modified selection system of cutting which utilizes about 65 percent of the stand. Private lumbering operations are also in progress on the project area and the two together contemplate the removal of a considerable timber volume in the near future.

In addition to the growth and utilization of saw timber the Adin Area is used extensively for the grazing of domestic stock during the summer months.

BASIS FOR DETERMINING INSECT HAZARD

Timber Resources

The methods used by the Inventory to determine insect hazard require adequate timber estimates. A lack of satisfactory estimates has made it necessary to obtain these on each of the areas sampled. The estimates are secured for each tree species from sample strips by measuring the number and board-foot volume of each tree over 11.6 inches in diameter.

Sampling Methods

A selected strip system of sampling is used by the Inventory to obtain data necessary for the determination of insect hazard. The strips are one chain wide and run in units of one mile. They are selected to represent stand conditions in larger surrounding areas following a general reconnaissance and a study of available vegetation type, topographic, or cultural maps.

A total of 235 miles of strips were run in the Adin Area, 87 percent of which were timbered. This amounts to an 0.8 percent sample of the 209,000 pine timbered acres in this reporting unit.

Insect-caused Losses

Past cumulative insect-caused losses in virgin pine stands and the average annual loss since logging in outover stands are measured and used by the Inventory as one of the indices of insect hazard. These losses are measured on the sample strips in the form of insect-killed snags. In the report they are presented as a percent of the stand at the beginning of the loss period. Losses in other tree species are also measured, but not used to determine insect hazard.

Insect Risk of 3-needle Pines

The proportion of individual 3-needle pine trees now showing evidence of high insect-risk gives some indication of the source and amount of expected losses from insects. It is natural to assume that the greater the percentage of high-risk individuals in the stand the greater the loss potential of the whole stand. This factor, when tempered by past loss history, serves as an indication of insect hazard.

A four-class system of risk ratings is used by the Inventory, and applied to each 3-needle pine on the sample strips.

Hazard Classification of Eastside Pine Stands

Every 3-needle pine stand covered by the Inventory is classified into one of five degrees of insect hazard. The hazard ratings are based upon (1) a knowledge of past history and stand conditions, and (2) the probable course of future insect activities. The first is indicated by the amount of past insect-caused losses and the second by the proportion of high risk 3-needle pines in the stand.

In order to determine the hazard class of any pine stand the individual sample strips in the stand are first given a hazard rating. Strips of similar hazard are grouped and the area sampled by them delineated on the accompanying hazard classification map. The statistical data on the strips is then averaged for each hazard class and presented in tabular form.

Entomological Units

Following the subdivision of the project area by degrees of insect hazard a number of entomological units are established in order to facilitate treatment of the area and to minimize the effects of variable conditions which are almost always present in large forest areas. The entomological units are primarily insect-control units but they correspond, whenever possible, to those already established for administrative purposes.

The number of units depends to some extent on the size of the reporting area; the location and extent upon the following considerations, in the approximate order of importance:

1. Insect hazard.
2. Uniformity of stand.
3. Topography.
4. Location of existing administrative boundaries.

RESULTS OF THE HAZARD INVENTORY IN THE ADIN AREA

Unit Subdivisions

Since the results of the Inventory in the Adin Area are expressed wholly in terms of entomological units, a description of the subdivision of the project area into units is given first for the sake of clarity.

Ten entomological units have been used as indicated on the accompanying hazard classification map. They range in size from 15,000 to 38,000 acres (see Table 1).

The boundaries of all the units conform to either changes in insect hazard or to ridges or other distinct topographic features.

The entomological units harmonize for the most part with administrative units now in use by the Modoc National Forest, thus facilitating the use of the Inventory data in this area by the Forest.

Timber Resources as Shown by Sample Strips

Approximately 96 percent of the timberland in the Adin Area was in a virgin state at the time of the Inventory. The per-acre stand figures for each unit given in the Appendix shows considerable variation:

	<u>3-needle Pine</u>	<u>Other Species</u>
Volume per Acre, Minimum	2,710	180
Volume per Acre, Maximum	17,510	5,260

In Table 2 the timber stand averages for the project area are tabulated by entomological units and hazard zones. The total estimated 3-needle pine (ponderosa--Jeffrey) stand for the Adin Area is 2,090 million board feet; for the other timber species, chiefly white fir and incense cedar, 475 million board feet. All stand figures in the report are averaged from the sample strips of the Inventory and include gross volume of all trees over 11.6 inches in diameters.

Cutover reserve stands on the project area also exhibit considerable fluctuation in per acre estimates due principally to the different types and degrees of cutting as shown in Figures 5 and 6 (see also Appendix tables).

Insect Loss

The accumulated insect-caused mortality in the ponderosa-Jeffrey pine stand of the Adin Area has averaged 20 percent in recent years. In smaller areas, however, this mortality has varied from extremes of 9 to 42 percent with the major proportion of the areas lying between 12 and 36 percent. Losses fluctuated on a volume basis from 1,500 to 4,200 board feet per acre.

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Table 1

AREA SUBDIVISION - BY UNITS

UNIT	NON-TIMBERED ACREAGE	TIMBERED ACREAGE	TOTAL UNIT ACREAGE	CUTOVER ACREAGE	VIRGIN TIMBERED ACREAGE
DUTCH FLAT	2,970	14,080	17,050	560	13,520
STONE COAL		20,940	20,940	2,220	18,720
TOMS CREEK	1,920	29,180	31,100	2,840	26,340
LIKELY	180	26,850	27,030	1,080	25,670
RUSH CREEK	5,480	18,250	23,730	1,180	17,070
SWEAGERT FLAT	1,840	13,470	15,310		13,470
ASH CREEK	3,020	18,870	21,890		18,870
WILLOW CREEK	6,040	32,460	38,500		32,460
JUNIPER CREEK	2,050	14,540	16,590		14,540
BOYD SPRING	1,690	20,680	22,370		20,680
TOTAL AREA	25,190	209,320	234,510	7,880	201,440

FOREST INSECT HAZARD INVENTORY

ADTIN AREA

Table 2
TIMBER RESOURCES
By Units and Insect Hazard

ENTOMOLOGICAL UNITS	INSECT HAZARD RATING	VIRGIN TIMBERED ACREAGE	TIMBER STAND - 1938	
			3-NEEDLE PINES VOLUME (m.b.m.)	ALL SPECIES ⁽¹⁾ VOLUME (m.b.m.)
DUTCH FLAT	IV	7,920	93,797.4	119,901.7
	V	5,600	31,027.9	39,244.2
STONE COAL	IV	16,420	122,058.1	143,847.4
	V	2,300	17,671.4	22,339.7
TOMS CREEK	III	520	6,478.6	7,391.3
	IV	25,820	364,095.6	471,129.8
LIKELY	III	25,770	451,343.5	586,816.4
RUSH CREEK	III	2,870	37,168.5	46,409.3
	IV	13,620	120,351.8	155,924.5
	V	580	1,573.2	1,674.7
SWEAGERT FLAT	III	13,470	159,406.7	245,422.1
ASH CREEK	III	1,150	9,848.1	9,848.1
	IV	16,870	127,075.0	143,761.1
	V	850	3,799.6	4,273.4
WILLOW CREEK	IV	29,360	225,825.4	226,262.8
	V	3,100	19,567.5	19,704.5
JUNIPER CREEK	V	14,540	123,427.2	136,632.4
BOYD SPRING	III	2,070	28,582.6	29,295.9
	IV	16,640	129,079.8	135,561.1
	V	1,970	18,283.4	20,381.8
TOTALS		201,440	2,090,461.3	2,565,822.2

(1) Ponderosa Pine, Jeffrey Pine, Incense Cedar, White Fir

(See unit tables in Appendix for proportion of species)

The losses from insects in each entomological unit are given in Table 3. A total cumulative loss of over 500 million feet on a little over 200,000 acres seems almost incredible but similar losses have been recorded throughout many other eastside pine areas as shown by the Inventory and the annual forest insect survey of this region. This has been the first widespread attempt, however, at measuring the loss from insects in most of the Adin Area.

Generally speaking, insect-caused losses here are typical of those in many pine stands in northeastern California. To date the most important effect of this tremendous stand depletion has been to reduce, in many instances, the economic value of the commercial stands. Continued losses on the same scale will threaten the very existence of the stands themselves.

Insect-caused losses in cutover areas are presented in the Appendix. No summaries have been prepared because of the relatively small acreage involved. The difficulty encountered in preparing adequate loss data on cutover areas has been mentioned and it is believed the chief value of these data in the report is to indicate the extent of recent insect infestations rather than to present an accurate summarization of losses.

Insect Risk in 3-Needle Pines

An average of 21 percent of the 3-needle pine volume on the Adin Area was found to be in high-risk trees. The proportion of high-risk trees is given on a board-foot volume basis for each entomological unit in Table 4. This varied from 12 percent in Sweagert Flat to 55 percent on a small high-hazard area in Rush Creek.

The insect-risk in the 3-needle pine cutover reserves is given in the Appendix by entomological units and hazard classes. The percentage of high-risk appears out of line in some cutover areas and may be attributed in most cases to lack of sufficient samples.

Hazard Classification

The pine stands of the Adin Area have been classified according to their potential insect hazard as shown on the accompanying hazard classification map. Three hazard ratings were applied, distributed on an acreage basis as follows:

Hazard III	Moderate	46,950 acres	22.4 percent
Hazard IV	High	132,830 acres	63.5 percent
Hazard V	Very high	29,540 acres	14.1 percent

Approximately 77 percent of the pine timberlands in the Adin Area, or over 160,000 acres, is considered highly hazardous from an insect standpoint. While this is the highest figure yet reported upon in any of the areas covered by the Inventory it is the first typically eastside pine area

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Table 3
INSECT LOSS
By Units and Insect Hazard

ENTOMOLOGICAL UNITS	INSECT HAZARD RATING	VIRGIN TIMBERED ACREAGE	CUMULATIVE INSECT LOSS			
			3-NEEDLE PINES		ALL SPECIES ⁽¹⁾	
			VOLUME		VOLUME	
			(m.b.m.)	%	(m.b.m.)	%
DUTCH FLAT	IV	7,920	25,441.4	21.3	28,725.8	19.3
	V	5,600	18,214.6	37.0	20,302.2	34.1
STONE COAL	IV	16,420	33,506.7	21.5	38,610.0	21.2
	V	2,300	6,650.2	27.3	6,905.7	23.6
TOMS CREEK	III	520	1,090.2	14.4	1,234.6	14.3
	IV	25,820	72,907.9	16.7	92,518.2	16.4
LIKELY	III	25,770	60,791.4	11.9	98,791.9	14.4
RUSH CREEK	III	2,870	3,675.3	9.0	4,710.8	9.2
	IV	13,620	49,273.1	29.0	55,225.0	26.2
	V	580	1,157.1	42.4	1,278.9	43.3
SWEAGERT FLAT	III	13,470	24,177.3	13.2	50,554.3	17.1
ASH CREEK	III	1,150	1,728.0	14.9	1,728.0	14.9
	IV	16,870	35,501.2	21.8	42,527.6	22.8
	V	850	2,136.3	36.0	2,236.7	34.4
WILLOW CREEK	IV	29,360	50,490.4	18.3	50,616.6	18.3
	V	3,100	5,105.1	20.7	5,121.5	20.6
JUNIPER CREEK	V	14,540	70,088.6	36.2	72,346.7	34.6
BOYD SPRING	III	2,070	3,633.1	11.3	3,827.8	11.6
	IV	16,640	46,896.5	26.6	48,357.5	26.3
	V	1,970	6,968.5	27.6	7,864.6	27.8
TOTALS		201,440	519,432.9	19.9	633,484.4	19.8

(1) Ponderosa Pine, Jeffrey Pine, Incense Cedar, White Fir

(See unit tables in Appendix for proportion of species)

FOREST INSECT HAZARD INVENTORY

ADIV AREA

Table 4
INSECT RISK OF 3-NEEDLE PINES
By Units and Insect Hazard

ENTOMOLOGICAL UNITS	INSECT HAZARD RATING	VIRGIN TIMBERED ACREAGE	3-NEEDLE PINES VOLUME (m.b.m.)	PROPORTION OF HIGH RISK TREES IN 3-NEEDLE PINES	
				VOLUME(m.b.m.)	%
DUTCH FLAT	IV	7,920	93,797.4	22,187.1	23.6
	V	5,600	31,027.9	10,945.8	35.2
STONE COAL	IV	16,420	122,058.1	20,905.9	17.1
	V	2,300	17,671.4	5,363.4	30.3
TOMS CREEK	III	520	6,478.6	691.9	10.7
	IV	25,820	364,095.6	102,634.5	28.2
LIKELY	III	25,770	451,343.5	62,283.5	13.8
RUSH CREEK	III	2,870	37,168.5	5,310.1	14.3
	IV	13,620	120,351.8	19,550.1	16.2
	V	580	1,573.2	864.2	54.9
SWEAGERT FLAT	III	13,470	159,406.7	19,705.3	12.3
ASH CREEK	III	1,150	9,848.1	1,551.6	15.8
	IV	16,870	127,075.0	34,730.3	27.3
	V	850	3,799.6	869.3	22.9
WILLOW CREEK	IV	29,360	225,825.4	53,206.2	23.6
	V	3,100	19,567.5	7,419.5	37.9
JUNIPER CREEK	V	14,540	123,427.2	33,405.7	27.1
BOYD SPRING	III	2,070	28,582.6	5,024.3	17.6
	IV	16,640	129,079.8	29,120.0	22.6
	V	1,970	18,283.4	4,880.0	26.7
TOTALS		201,440	2,090,461.3	440,648.7	21.1

to be sampled. Other areas similar to this remain to be sampled by the Inventory and it is expected that some of these will show a comparable ratio of high-hazard stands.

Most of the Adin Area is uniformly high-hazard but the areas of highest hazard are concentrated in the Juniper Creek infestation unit southeast of the town of Bieber and in parts of the Dutch Flat unit northwest of Adin. The high summit country in the Sweagert Flat unit and the north slopes of the Likely unit appear to be the least hazardous.

The cutover lands in the Likely, Toms Creek, Stone Coal, Rush Creek, and Dutch Flat units have been rated according to the hazard of the stand prior to logging. These cutover areas are as yet not too extensive and most are recent cuttings so that these are of minor importance. The major insect problem in the Adin Area is in the virgin timber comprising 89 percent of all pine timberlands.

SUMMARY OF INVENTORY RESULTS IN THE ADIN AREA

Approximately 160,000 acres, or 77 percent of the timbered acreage of the Adin Area, has been given a high insect hazard rating.

Stand depletion from insects in the project area has amounted in recent years to over 500 million board feet.

In the remaining green stand 400 million feet, or 21 percent, is in high-risk trees. This volume is susceptible to barkbeetles and constitutes a source of further loss if present conditions continue to exist.

Normal lumbering operations in the Adin Area are not moving through the stand at a rate rapid enough to forestall this potential loss over a widespread area. In addition some of the operations are centered in relatively low-hazard stands which could be held in reserve while the values are salvaged from the high-hazard stands.

It is believed that the removal of those trees most subject to insect attack will greatly reduce the chances for continued heavy losses in the virgin reserve stands and at the same time allow a realization of those timber values which might otherwise be lost. The recent development of mobile logging equipment and a fairly extensive road system will greatly facilitate the removal of this material from the stand. This form of control has already demonstrated its practicability in several experimental tests in eastside pine areas.

REFERENCES

1. Johnson, P. C. "Forest insect hazard inventory, progress report, Eastern Lassen area, California." Forest Insect Laboratory report, Berkeley, California. May 20, 1938.
2. Johnson, P. C. "Forest insect hazard inventory, progress report, Burney area, California." Forest Insect Laboratory report, Berkeley, California. June 14, 1939.
3. Johnson, P. C. "Forest insect hazard inventory, progress report, Fall River area, California." Forest Insect Laboratory report, Berkeley, California. June 14, 1939.
4. Johnson, P. C. "Progress report, forest insect hazard inventory, Big Valley Mountain area, California." Forest Insect Laboratory report, Berkeley, California. September 20, 1939.
5. Salman, K. A. and Johnson, P. C. "Forest insect hazard inventory of eastside forest areas. Preliminary report on methods and their application." Forest Insect Laboratory report, Berkeley, California. September 21, 1937.
6. Salman, K. A. and Johnson, P. C. "Forest insect hazard ratings for the Eagle Lake tract of the Fruit Growers supply Company in T. 31 N., R. 10 E., M. D. M." Forest Insect Laboratory report, Berkeley, California. December 7, 1937.
7. Salman, K. A. "Insect hazard to the pine resources of northeastern California." Forest Insect Laboratory mimeographed report, Berkeley, California. December, 1938.



Figure 1. (11007C) VIRGIN TIMBERED AREAS SAMPLED BY THE INVENTORY
Scattered Jeffrey pine-western juniper stand on high plateau area west of Hayden Hill and typical of much of the area in the Boyd Spring and Juniper Creek entomological units. Stand interspersed with sage openings.



Figure 2. (11007D) VIRGIN TIMBERED AREAS SAMPLED BY THE INVENTORY

Heavy ponderosa-Jeffrey pine stand found in the sheltered or depressed flats and ravines of the Boyd Spring and Juniper Creek entomological units. The insect hazard of these stands is usually lower than that of the adjacent stands shown in Figure 1 but because of their small area the differentiation of hazard zones was omitted from the map.



Figure 3. (11007E) VIRGIN TIMBERED AREAS SAMPLED BY THE INVENTORY

Heavy loss in mixed coniferous fringe type on Bieber-Boyd Hill road. Visible in the photo are dead trees of the following species; ponderosa and sugar pine, incense cedar, and white fir. Mixed coniferous stands have usually been found to be low or moderately hazardous but the Inventory has encountered several stands of this type which were highly hazardous and had suffered heavily from the inroads of insects.



Figure 4. (11007A) VIRGIN TIMBERED AREAS SAMPLED BY THE INVENTORY
Stand at the edge of Roney Flat in the Dutch Flat entomological unit showing reproduction creeping into opening and snags killed by insects in the mature stand in the background.



Figure 5. (11009) CUTOVER STANDS SAMPLED BY THE INVENTORY

View of cutover land cut in 1938 showing a number of high-risk trees (indicated by arrows) making up the pine reserve. Some also show results of damage incurred during logging which will further reduce the resistant qualities of these trees. There is some likelihood that this pine reserve stand may succumb from insect attacks before natural regeneration of the stand has been established.



Figure 6. (11108A) CUTOVER STANDS SAMPLED BY THE INVENTORY

This stand was cut in 1938 under a modified selection system. Lack of sufficient younger age classes necessitated leaving a number of mature and over-mature trees especially selected for their insect resistant qualities. These are indicated in the photo. Despite their maturity these trees have an excellent chance of survival from insect attack in the near future while serving in the capacity of seed trees and as a source of quality logs during the next cutting cycle.

APPENDIX

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
DUTCH FLAT UNIT

TIMBER RESOURCES

Tree Species	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	13.490	54.3	9,906.5	65.4	2.351	18.4	3,239.4	46.2
Jeffrey Pine	3.020	12.1	1,936.6	12.8	4.437	34.8	2,310.3	33.0
Incense Cedar	5.326	21.4	2,307.7	15.3	2.583	20.3	700.3	10.0
White Fir	3.020	12.2	988.3	6.5	3.377	26.5	757.9	10.8
TOTAL	24.856	100.0	15,139.1	100.0	12.748	100.0	7,007.9	100.0

CUMULATIVE INSECT LOSS

Tree Species	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine and Jeffrey Pine	3.475	17.4	3,212.3	21.3	2.980	30.5	3,252.6	37.0
Incense Cedar	0.273	4.9	156.0	6.3	0.199	7.2	88.7	11.2
White Fir	0.546	15.3	258.7	20.7	0.828	19.7	284.1	27.3
TOTAL	4.294	14.7	3,627.0	19.3	4.007	23.9	3,625.4	34.1

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
I	8.665	52.5	4,378.7	37.0	3.245	47.8	1,500.3	27.0
II	5.493	33.3	4,663.0	39.4	2.285	33.7	2,094.8	37.8
III	1.608	9.7	1,915.5	16.1	0.993	14.6	1,466.9	26.4
IV	0.744	4.5	885.9	7.5	0.265	3.9	487.7	8.8
III & IV	2.352	14.2	2,801.4	23.6	1.258	28.5	1,954.6	35.2
TOTAL	16.510	100.0	11,843.1	100.0	6.788	100.0	5,549.7	100.0

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
DUTCH FLAT UNIT
(Cutover)

TIMBER RESOURCES

Tree Species	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	7.241	51.2	2,058.6	68.8	1.500	100.0	365.0	100.0
Jeffrey Pine								
Incense Cedar	6.207	43.9	658.6	22.0				
White Fir	0.690	4.9	275.9	9.2				
TOTAL	14.138	100.0	2,993.1	100.0	1.500	100.0	365.0	100.0

PER ACRE PER YEAR INSECT LOSS (Since Logging)

Tree Species	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	0.517	6.2	169.0	7.1	0.500	20.0	112.5	19.1
Incense Cedar	0.069	1.1	17.2	2.3				
TOTAL	0.586	3.8	186.2	5.4	0.500	20.0	112.5	19.1

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD IV				HAZARD V			
	Trees No	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
I	6.551	90.5	1,824.1	88.6	0.500	33.3	20.0	5.5
II	0.345	4.8	213.8	10.4	0.500	33.3	140.0	38.3
III					0.500	33.4	205.0	56.2
IV	0.345	4.7	20.7	1.0				
III & IV	0.345	4.7	20.7	1.0	0.500	33.4	205.0	56.2
TOTAL	7.241	100.0	2,058.6	100.0	1.500	100.0	365.0	100.0

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
STONE COAL UNIT

TIMBER RESOURCES

Tree Species	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	8.814	56.4	5,515.7	63.0	8.280	57.9	6,533.7	67.3
Jeffrey Pine	2.753	17.6	1,917.8	21.9	1.900	13.3	1,149.5	11.8
Incense Cedar	2.514	16.1	1,032.3	11.8	3.548	24.8	1,765.2	18.2
White Fir	1.556	9.9	294.7	3.3	0.573	4.0	264.5	2.7
TOTAL	15.637	100.0	8,760.5	100.0	14.301	100.0	9,712.9	100.0

CUMULATIVE INSECT LOSS

Tree Species	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	2.155	15.7	2,040.6	21.5	3.082	23.2	2,891.4	27.3
Incense Cedar	0.152	5.7	81.3	7.3	0.143	3.9	88.5	4.8
White Fir	0.359	18.7	229.5	43.8	0.072	11.2	22.6	7.9
TOTAL	2.666	14.6	2,351.4	21.2	3.297	18.7	3,002.5	23.6

DISTRIBUTION OF INSECT LOSS IN 3-NEEDLE PINES

Risk Classes	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
I	8.781	75.9	4,320.2	58.1	6.631	65.1	3,415.1	44.5
II	1.828	15.8	1,840.1	24.8	1.900	18.7	1,936.2	25.2
III	0.490	4.2	679.2	9.1	1.004	9.9	1,122.9	14.6
IV	0.468	4.1	594.0	8.0	0.645	6.3	1,209.0	15.7
III & IV	0.958	9.3	1,273.2	17.1	1.649	16.2	2,331.9	30.3
TOTAL	11.567	100.0	7,433.5	100.0	10.180	100.0	7,683.2	100.0

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
STONE COAL UNIT
(Cutover)

TIMBER RESOURCES

Tree Species	HAZARD IV			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	9.890	50.9	3,624.2	54.5
Jeffrey Pine	1.538	7.9	302.2	4.6
Incense Cedar	5.934	30.5	2,106.6	31.7
White Fir	2.088	10.7	612.1	9.2
TOTAL	19.450	100.0	6,645.1	100.0

PER ACRE PER YEAR INSECT LOSSES (Since Logging)

Tree Species	HAZARD IV			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	0.046	0.4	3.8	0.1
Incense Cedar	0.022	0.4	0.0	0.0
White Fir	0.022	1.0	20.2	2.8
TOTAL	0.090	0.4	24.0	0.3

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD IV			
	Trees No.	%	Volume Bd. Ft.	%
I	1.128	9.8	1,014.2	15.3
II	0.989	8.6	477.1	7.2
III	0.329	2.9	187.3	2.8
IV	0.110	1.0	5.9	0.1
III & IV	0.439	3.9	193.5	2.9
TOTAL	11.428	100.0	7,925.1	100.0

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
TOMS CREEK UNIT

TIMBER RESOURCES

Tree Species	HAZARD III				HAZARD IV			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	23.647	78.5	11,604.7	81.6	13.830	50.0	11,289.0	61.9
Jeffrey Pine	2.471	8.2	854.1	6.0	4.330	15.7	2,812.3	15.4
Incense Cedar	3.412	11.3	1,697.6	12.0	3.555	12.9	1,914.9	10.5
White Fir	0.588	2.0	57.6	0.4	5.912	21.4	2,230.5	12.2
TOTAL	30.118	100.0	14,214.0	100.0	27.627	100.0	18,246.7	100.0

CUMULATIVE INSECT LOSS

Tree Species	HAZARD III				HAZARD IV			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	3.294	11.2	2,096.5	14.4	2.173	10.7	2,823.7	16.7
Incense Cedar	0.353	9.4	155.3	8.4	0.125	3.4	70.4	3.5
White Fir	0.235	28.6	122.4	68.0	1.099	15.7	689.1	23.6
TOTAL	3.882	11.4	2,374.2	14.3	3.397	10.9	3,583.2	16.4

DISTRIBUTION OF INSECT LOSS IN 3-NEEDLE PINES

Risk Classes	HAZARD III				HAZARD IV			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
I	19.647	75.2	7,987.0	64.1	11.541	63.6	6,008.7	42.6
II	4.706	18.0	3,141.2	25.2	4.213	23.2	4,117.6	29.2
III	1.412	5.4	998.8	8.0	1.515	8.3	2,292.9	16.3
IV	0.353	1.4	331.8	2.7	0.891	4.9	1,682.1	11.9
III & IV	1.765	6.8	1,330.6	10.7	1.406	13.2	3,975.0	28.2
TOTAL	26.118	100.0	12,458.8	100.0	18.160	100.0	14,101.3	100.0

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
TOMS CREEK UNIT
(Cutover)

TIMBER RESOURCES

Tree Class	HAZARD IV			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	12.172	54.9	2,909.4	49.7
Jeffrey Pine	1.685	7.6	477.5	8.2
Incense Cedar	3.408	15.4	1,282.4	21.9
White Fir	4.906	22.1	1,179.0	20.2
TOTAL	22.171	100.0	5,848.3	100.0

PER ACRE PER YEAR INSECT LOSS (Since Logging)

Tree Species	HAZARD IV			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pines and Jeffrey Pines	0.032	0.2	13.7	0.4
TOTAL	0.032	0.1*	13.7	0.2*

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD IV			
	Trees No.	%	Volume Bd. Ft.	%
I	10.674	77.0	1,869.7	55.2
II	2.284	16.5	952.4	28.1
III	0.712	5.1	490.6	14.5
IV	0.187	1.4	74.2	2.2
III & IV	0.899	6.5	564.8	16.7
TOTAL	13.857	100.0	3,386.9	100.0

* No loss in incense cedar or white fir.

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
LIKELY UNIT

TIMBER RESOURCES

Tree Species	HAZARD III			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	10.901	38.2	13,208.8	58.0
Jeffrey Pine	5.572	19.5	4,305.5	18.9
Incense Cedar	0.546	1.9	271.1	1.2
White Fir	11.557	40.5	4,985.9	21.9
TOTALS	28.576	100.0	22,771.3	100.0

CUMULATIVE INSECT LOSS

Tree Species	HAZARD III			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	1.650	9.1	2,359.0	11.9
Incense Cedar	0.012	2.2	11.3	4.0
White Fir	2.330	16.8	1,463.3	22.7
TOTALS	3.992	12.3	3,833.6	14.4

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD III			
	Trees No.	%	Volume Bd. Ft.	%
I	12.016	73.0	10,189.6	58.2
II	3.184	19.3	4,907.8	28.0
III	0.843	5.1	1,484.9	8.5
IV	0.430	2.6	932.0	5.3
III & IV	1.273	7.7	2,416.9	13.8
TOTALS	16.473	100.0	17,514.3	100.0

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
 LIKELY UNIT
 (Cutover)

TIMBER RESOURCES

Tree Species	HAZARD III			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	8.571	33.0	6,765.7	53.7
Jeffrey Pine	4.000	15.4	594.3	4.7
White Fir	13.428	51.6	5,231.4	41.6
TOTAL	25.999	100.0	12,591.4	100.0

PER ACRE PER YEAR INSECT LOSS (Since Logging)

Tree Species	HAZARD III			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	0.286	2.1	109.3	1.4
TOTAL	0.286	1.1 *	109.3	0.8 *

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD III			
	Trees No.	%	Volume Bd. Ft.	%
I	11.428	90.9	6,314.3	85.8
II	0.857	6.8	117.1	1.6
III				
IV	0.286	2.3	928.6	12.6
III & IV	0.286	2.3	928.6	12.6
TOTAL	12.571	100.0	7,360.0	100.0

* No loss in incense cedar or white fir.

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
RUSH CREEK UNIT

TIMBER RESOURCES

Tree Species	HAZARD III				HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	1.382	6.5	2,374.2	14.7	9.597	48.1	7,084.0	61.9	1.250	10.2	155.0	5.4
Jeffrey Pine	12.304	58.3	10,576.5	65.4	3.736	18.7	1,752.4	15.3	8.500	69.4	2,557.5	88.6
Incense Cedar	0.922	4.4	418.9	2.6	4.582	23.0	1,845.1	16.1	1.750	14.3	87.5	3.0
White Fir	6.498	30.8	2,800.9	17.3	2.034	10.2	766.7	6.7	0.750	6.1	87.5	3.0
TOTALS	21.106	100.0	16,170.5	100.0	19.949	100.0	11,448.2	100.0	12.250	100.0	2,887.5	100.0

CUMULATIVE INSECT LOSS

Tree Species	HAZARD III				HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	1.106	7.5	1,280.6	9.0	3.847	22.4	3,617.7	29.0	2.250	18.9	1,995.0	42.4
Incense Cedar					0.302	6.2	165.8	8.2	0.500	22.2	210.0	70.5
White Fir	0.783	10.8	360.8	11.4	0.413	16.9	271.2	26.1				
TOTALS	1.889	8.2	1,641.4	9.2	4.562	18.6	4,054.7	26.2	2.750	18.3	2,205.0	43.3

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD III				HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees NO.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
I	9.401	68.7	7,284.9	56.2	8.983	67.4	4,388.8	49.7	7.250	74.3	1,145.0	42.2
II	3.133	22.9	3,815.6	29.5	3.111	23.3	3,012.2	34.1	1.000	10.3	77.5	2.9
III	0.922	6.7	1,288.5	10.0	0.806	6.0	979.3	11.1	1.500	15.4	1,490.0	54.9
IV	0.230	1.7	561.7	4.3	0.433	3.3	456.1	5.1				
III & IV	1.152	8.4	1,850.2	14.3	1.239	9.3	1,435.4	16.2	1.500	15.4	1,490.0	54.9
TOTALS	13.686	100.0	12,950.7	100.0	13.333	100.0	8,836.4	100.0	9.750	100.0	2,712.5	100.0

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
RUSH CREEK UNIT
(Cutover)

TIMBER RESOURCES

Tree Species	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	9.366	54.7	3,508.5	66.5	6.750	93.1	2,827.5	99.7
Jeffrey Pine	0.563	3.3	104.9	2.0				
Incense Cedar	4.296	25.1	1,059.9	20.1	0.250	3.4	0.0	0.0
White Fir	2.887	16.9	603.5	11.4	0.250	3.5	7.5	0.3
TOTAL	17.112	100.0	5,276.8	100.0	7.250	100.0	2,835.0	100.0

PER ACRE PER YEAR INSECT LOSS (Since Logging)

Tree Species	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	0.094	0.9	86.7	2.1	0.500	6.9	120.0	4.1
Incense Cedar	0.047	1.1	16.8	1.4				
White Fir	0.016	0.5	23.0	3.3				
TOTAL	0.157	0.9	126.5	2.1	0.500	6.5	120.0	4.1

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
I	7.183	72.3	2,124.6	58.8	4.500	66.7	1,987.5	70.3
II	2.042	20.6	1,026.8	28.4	1.750	25.9	735.0	26.0
III	0.352	3.5	161.3	4.5	0.250	3.7	92.5	3.3
IV	0.352	3.6	300.7	8.3	0.250	3.7	12.5	0.4
III & IV	0.704	7.1	462.0	12.8	0.500	7.4	105.0	3.7
TOTAL	9.929	100.0	3,613.4	100.0	6.750	100.0	2,827.5	100.0

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
SWEAGERT FLAT UNIT

TIMBER RESOURCES

Tree Species	HAZARD III			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	6.119	24.7	7,588.4	41.6
Jeffrey Pine	5.802	23.5	4,245.8	23.3
Incense Cedar	0.466	1.9	264.8	1.5
White Fir	12.324	49.9	6,120.9	33.6
TOTALS	24.711	100.0	18,219.9	100.0

CUMULATIVE INSECT LOSS

Tree Species	HAZARD III			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	1.209	9.2	1,794.9	13.2
Incense Cedar	0.087	15.7	27.3	9.3
White Fir	2.285	15.6	1,930.9	24.0
TOTALS	3.581	12.7	3,753.1	17.1

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD III			
	Trees No.	%	Volume Bd. Ft.	%
I	9.193	77.1	7,308.5	61.8
II	2.016	16.9	3,062.8	25.9
III	0.522	4.4	1,081.9	9.1
IV	0.190	1.6	381.0	3.2
III & IV	0.712	6.0	1,462.9	12.3
TOTALS	11.921	100.0	11,834.2	100.0

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
ASH CREEK UNIT

TIMBER RESOURCES

Tree Species	HAZARD III				HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	6.154	38.3	2,829.2	33.0	6.545	44.1	4,356.6	51.1	1.823	24.1	2,470.7	49.1
Jeffrey Pine	9.897	61.7	5,734.4	67.0	4.694	31.6	3,176.0	37.3	4.696	62.0	1,999.4	39.8
Incense Cedar					0.626	4.2	331.9	3.9	0.497	6.6	506.1	10.0
White Fir					2.973	20.1	657.2	7.7	0.552	7.3	51.4	1.0
TOTALS	16.051	100.0	8,563.6	100.0	14.838	100.0	8,521.7	100.0	7.568	100.0	5,027.6	100.0

CUMULATIVE INSECT LOSS

Tree Species	HAZARD III				HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	2.667	14.2	1,502.6	14.9	2.021	15.2	2,104.4	21.8	2.210	25.3	2,513.3	36.0
Incense Cedar					0.104	14.2	41.3	11.1	0.166	25.0	112.7	18.2
White Fir					0.874	22.7	375.2	36.4	0.055	9.1	5.5	9.6
TOTALS	2.667	14.2	1,502.6	14.9	2.999	16.8	2,520.9	22.8	2.431	24.3	2,631.5	34.4

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD III				HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
I	11.898	74.1	4,902.1	57.2	7.106	63.2	3,515.9	46.7	4.640	71.2	2,111.7	57.3
II	2.015	16.3	2,312.3	27.0	2.177	21.1	1,948.0	25.0	1.050	16.1	1,348.2	29.8
III	0.923	5.8	851.8	10.1	1.241	9.3	1,022.1	16.8	0.608	9.3	740.1	17.7
IV	0.615	3.8	487.8	5.7	0.717	6.4	748.4	10.5	0.221	3.4	210.4	5.2
III & IV	1.538	9.6	1,349.2	15.8	1.760	15.7	2,058.7	27.3	0.829	12.7	1,022.7	22.9
TOTALS	16.051	100.0	8,563.6	100.0	11.239	100.0	7,532.6	100.0	7.568	100.0	5,470.1	100.0

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
WILLOW CREEK UNIT

TIMBER RESOURCES

Tree Species	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	5.151	35.1	2,937.5	38.1	10.508	78.8	4,971.8	78.2
Jeffrey Pine	9.306	63.5	4,754.1	61.7	2.437	18.3	1,340.3	21.1
Incense Cedar	0.014	0.1	1.0	0.0	0.360	2.7	34.5	0.5
White Fir	0.193	1.3	13.9	0.2	0.021	0.2	9.7	0.2
TOTAL	14.664	100.0	7,706.5	100.0	13.326	100.0	6,356.3	100.0

CUMULATIVE INSECT LOSS

Tree Species	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	2.063	12.5	1,719.7	18.3	2.119	14.1	1,646.8	20.7
Incense Cedar					0.042	10.4	5.3	13.3
White Fir	0.021	9.8	4.3	23.9				
TOTAL	2.084	12.4	1,724.0	18.3	2.161	14.0	1,652.1	20.6

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
I	9.202	63.7	3,599.7	46.8	6.801	52.5	1,926.3	30.5
II	3.329	23.0	2,279.7	29.6	3.432	26.5	1,992.4	31.6
III	1.252	8.7	1,083.1	14.1	1.631	12.6	1,633.9	25.9
IV	0.674	4.6	729.1	9.5	1.081	8.4	759.5	12.0
III & IV	1.926	13.3	1,812.2	23.6	2.712	21.0	2,393.4	37.9
TOTAL	14.457	100.0	7,691.6	100.0	12.945	100.0	6,312.1	100.0

FOREST INSECT HAZARD

ADIN AREA

Per Acre Summary
JUNIPER CREEK UNIT

TIMBER RESOURCES

Tree Species	HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	11.312	70.3	7,181.0	76.4
Jeffrey Pine	2.400	14.9	1,307.8	13.9
Incense Cedar	1.993	12.4	831.0	8.8
White Fir	0.382	2.4	77.2	0.9
TOTALS	16.087	100.0	9,397.0	100.0

CUMULATIVE INSECT LOSS

Tree Species	HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pines	6.337	31.6	4,820.4	36.2
Incense Cedar	0.158	7.3	113.0	12.0
White Fir	0.108	28.3	42.3	35.5
TOTALS	6.603	29.1	4,975.7	34.6

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%
I	7.824	57.0	3,464.5	40.8
II	3.588	26.2	2,726.8	32.1
III	1.395	10.2	1,387.8	16.4
IV	0.905	6.6	909.7	10.7
III & IV	2.300	16.8	2,297.5	27.1
TOTALS	13.712	100.0	8,488.8	100.0

FOREST INSECT HAZARD INVENTORY

ADIN AREA

Per Acre Summary
BOYD SPRINGS UNIT

TIMBER RESOURCES

Tree Species	HAZARD III				HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa Pine	11.672	54.8	8,316.0	58.8	6.200	53.1	4,619.5	56.7	9.951	58.5	6,858.3	66.3
Jeffrey Pine	8.955	42.1	5,492.0	38.8	4.495	38.5	3,137.7	38.5	4.510	26.5	2,422.6	23.4
Incense Cedar	0.592	2.8	339.7	2.4	0.767	6.6	341.1	4.2	2.353	13.8	1,051.5	10.2
White Fir	0.070	0.3	4.9	0.0	0.217	1.8	48.4	0.6	0.196	1.2	13.7	0.1
TOTALS	21.289	100.0	14,152.6	100.0	11.679	100.0	8,146.7	100.0	17.010	100.0	10,346.1	100.0

CUMULATIVE INSECT LOSS

Tree Species	HAZARD III				HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
Ponderosa and Jeffrey Pine	2.091	9.2	1,755.1	11.3	2.870	21.2	2,818.3	26.6	4.020	21.8	3,537.3	27.6
Incense Cedar	0.105	15.1	74.6	18.0	0.117	13.2	56.4	14.2	0.637	21.3	410.3	28.1
White Fir	0.139	66.5	19.5	81.3	0.045	17.2	31.4	39.3	0.098	33.3	44.6	76.9
TOTALS	2.335	9.9	1,849.2	11.6	3.032	20.6	2,906.1	26.3	4.755	21.8	3,992.2	27.8

DISTRIBUTION OF INSECT RISK IN 3-NEEDLE PINES

Risk Classes	HAZARD III				HAZARD IV				HAZARD V			
	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%	Trees No.	%	Volume Bd. Ft.	%
I	12.718	61.6	7,075.9	51.2	6.688	62.5	3,569.6	46.0	10.931	75.6	5,324.0	57.4
II	5.087	24.7	4,304.9	31.2	2.428	22.7	2,437.6	31.4	1.618	11.2	1,479.9	15.9
III	2.160	10.5	2,011.9	14.6	0.803	7.5	900.0	11.6	1.177	8.1	1,275.5	13.8
IV	0.662	3.2	415.3	3.0	0.776	7.3	850.0	11.0	0.735	5.1	1,201.5	12.9
III & IV	2.822	13.7	2,427.2	17.6	1.579	14.8	1,750.0	22.6	1.912	13.2	2,477.0	26.7
TOTALS	20.627	100.0	13,808.0	100.0	10.695	100.0	7,757.2	100.0	14.461	100.0	9,280.9	100.0